

### ABSTRACT OF THE DISCLOSURE

A cathode head is provide that is suitable for use in an x-ray device that includes an anode having a target surface configured and arranged to receive electrons emitted by the cathode head. The cathode head may be constructed of magnetic or non-magnetic material and includes an emitter block carrying a filament that defines a longitudinal axis about which is disposed one or more magnetic coils. The filament is configured and arranged to emit an electron beam that defines a focal spot on the target surface of the anode. The magnetic coil, or coils, disposed about the longitudinal axis defined by the filament generate a magnetic field that enables control of the location of the focal spot on the target surface of the anode.

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